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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,084	09/09/2003	Yoshiharu Ishibashi	239199US2	9163

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ALEXANDRIA, VA 22314

EXAMINER

BELL, ALLISON S

ART UNIT	PAPER NUMBER
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3737

DATE MAILED: 11/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/657,084

Applicant(s)

ISHIBASHI ET AL.

Examiner

Allison S. Bell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) ____ is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

A spelling error was found on page 4, line 21 of the specification, "anultrasonic" should be "an ultrasonic." Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 3, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Cole (5,617,862).

Cole discloses a variable aperture (col 2, lines 43-44) ultrasonic generating unit (R-20) including a plurality of piezoelectric elements (T-54) configured to irradiate an ultrasonic wave, a selection unit (Figures 3b, 16-20; col 11, lines 56-67) configured to select more than one of the piezoelectric elements (T-114) among the plurality of piezoelectric elements, and configured to change the selected piezoelectric elements,

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and a driving unit (Figure 14; col 14, lines 6-9) configured to drive the selected piezoelectric elements. Cole discloses the invention as comprising one or more transducers (T-112) wherein the number of elements in an array pattern can vary. Cole discloses a focusing device (col 3, lines 13-19) and a display unit (R-26 and R-28). Cole discloses that the transducer can be two-dimensional (col 14, lines 17-19). Cole discloses a delay unit as an aspect of the invention (T-119) and a rotation unit as part of the focusing unit (col 8, lines 41-45). Cole discloses an operation unit configured to determine the focus of the ultrasonic wave irradiated from the ultrasound generating unit in which transducer elements slide over one another (col 3, lines 13-19). Cole discloses a plurality of switches connected to the plurality of piezoelectric elements (col 2, lines 47-52) and a controller configured to switch the plurality of switches in a predetermined pattern (col 3, lines 1-6). The device of Cole is capable of being used for cancer applications. The variable aperture system is such that the transducer arrays may be independently placed and are not required to coincide. Such flexibility supports random aperture placement, sliding aperture acquisitions, and synthetic aperture acquisitions (col 2, lines 56-60), including reducing the size of the aperture when the focal distance is large and enlarging the size of the aperture when the focal distance is small, or vice versa.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 5, 6, 7, 8, 9, 10, 11, 12, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cole (5,617,862) in view of Kline-Schoder (5938612). Cole describes the invention substantially as claimed except for the selection unit comprising the piezoelectric elements connected on two substrates.

Kline-Schoder discloses the ultrasonic generating unit as including a plurality of piezoelectric elements two-dimensionally arranged (col 5, lines 16-18). Kline-Schoder discloses piezoelectric elements as being mounted on a substrate (component 24; Figures 10-12). Kline-Schoder discloses electrical connections between layers underneath the piezoelectric elements (col 2, lines 41-42). Kline-Schoder discloses the invention as having opposing curved surfaces (Figures 10, 11). Kline-Schoder discloses a cylindrical substrate (col 12, lines 31-33; Figure 13).

In regard to Claim 7, the choice of conductive brushes as a type of electrode is seen as a matter of obvious design choice. Cole and Kline-Schoder disclose different types of electrodes and there is no specific purpose given in the present application for the use of conductive brushes. Further, Ito (6288475) discloses the use of conductive brushes and, therefore, they are not seen as a novel electrode choice in the present invention.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to combine ultrasonic generating unit and all its

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components, including the one or more transducers as disclosed by Cole with the teaching of Kline-Schoder such that the piezoelectric elements of the one or more transducers were mounted on a substrate, the substrate could be cylindrical in shape, signal lines connected the electrodes of the substrate to the piezoelectric elements for the purpose fabricating the array in such a way as to promote improved transducer array sensitivity.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allison S. Bell whose telephone number is 571-272-2768. The examiner can normally be reached on Monday - Friday, 8.30 am - 4.30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ASB


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